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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,817	12/16/2005	John Mak	100325.0191US	5520
34284	7590	02/19/2008		
Rutan & Tucker, LLP. 611 ANTON BLVD SUITE 1400 COSTA MESA, CA 92626			EXAMINER DOERFLER, WILLIAM CHARLES	
			ART UNIT	PAPER NUMBER
			3744	
			MAIL DATE	DELIVERY MODE
			02/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,817

Applicant(s)

MAK, JOHN

Examiner

William C. Doerrler

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3-3-2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,9,10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Gottier (4,747,858).

Gottier discloses an absorption column for removing carbon dioxide from a methane rich stream. Line 41 of column 5 states that the column runs at 500 psi (with line 4 of column 4 stating that anywhere between 200 and 1000 psi). Line 42 of column 5 states that the feed has a concentration of 60% carbon dioxide. Column 4 line 45 states that a physical solvent is used. Line 17 of column 6 states that the absorber has a "relatively constant temperature. It is stated in line 59 of column 5, line 28 of column 6 and line 35 of column 6, respectively that lines 20,26 and 30 are fed to the column at 20 degrees. The feed, which enters the bottom of the column is stated to be cooled to 5 degrees. These passages indicate that the column is relatively isothermal with a small colder temperature gradient toward the bottom of the column. In regard to claim 2, see heat exchanger 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gottier in view of Mehra (4,421,535).

Gottier discloses applicant's basic inventive concept, an absorption column that functions over 400 psi which removes carbon dioxide from a methane rich stream and removes a solvent stream at an intermediate point to cool it before returning it to the column, substantially as claimed with the exception of using three expansion stages at progressively lower pressures to regenerate the solvent. Mehra shows this feature to be old in the absorber column art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Mehra to modify the absorber column system of Gottier by regenerating the solvent using three expansion stages at progressively lower pressures to effectively remove the carbon dioxide from the solvent without significantly heating the stream.

Claims 6,7,13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gottier in view of Foglietta et al (6,712,880).

Gottier discloses applicant's basic inventive concept, an absorption column that functions over 400 psi which removes carbon dioxide from a methane rich stream and removes a solvent stream at an intermediate point to cool it before returning it to the

column, substantially as claimed with the exception of using the rich solvent, after expansion, to cool the feed stream and the solvent entering the column. Foglietta et al shows this feature to be old in the absorber column art with expander 23 used to cool the rich solvent stream before cooling a relatively leaner stream (68) in heat exchanger 20 and the feed stream in heat exchanger 12. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Foglietta et al to modify the absorber column system of Gottier by using the expanded rich solvent stream for refrigeration to reduce the refrigeration load on the system using energy that is already present in the system.

Claims 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gottier in view of Burr (4,599,096).

Gottier discloses applicant's basic inventive concept, an absorption column that functions over 400 psi which removes carbon dioxide from a methane rich stream and removes a solvent stream at an intermediate point to cool it before returning it to the column, substantially as claimed with the exception of using membrane separation to assist in the separation. Burr shows this feature to be old in the absorber column art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Burr to modify the absorber column system of Gottier by using a membrane in association with the absorber column to provide efficient separation.

Allowable Subject Matter

Claims 3,5,12,18,21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lu, Hopewell, The three Gazzi et al patents, Mehra '282 and Ryan et al show systems which use absorber columns to remove carbon dioxide from a methane rich stream.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

William C Doerler
Primary Examiner
Art Unit 3744

WCD

/William C Doerler/
Primary Examiner, Art Unit 3744